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|--|-------------|----------------------|---------------------|--------------------|
| 10/733,383   | 12/12/2003  | Jun Han Ahn          | 0465-1115P          | 8538               |
| 2292   | 7590        | 10/28/2008           | EXAMINER            |                    |
| BIRCH STEWART KOLASCH & BIRCH<br>PO BOX 747<br>FALLS CHURCH, VA 22040-0747 |             |                      |                     | FLANDERS, ANDREW C |
| ART UNIT   |             | PAPER NUMBER         |                     |                    |
| 2614   |             |                      |                     |                    |
| NOTIFICATION DATE  |             |                      | DELIVERY MODE       |                    |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/733,383             | AHN ET AL.          |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | ANDREW C. FLANDERS     | 2614                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 14 July 2008.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-14 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-14 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 12 December 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____.   | 6) <input type="checkbox"/> Other: _____ .                        |

## DETAILED ACTION

### ***Response to Arguments***

Applicant's arguments filed 14 July 2008 have been fully considered but they are not persuasive.

Applicant alleges:

“Nordqvist et al. does not teach or suggest extracting features from the collected sample audio data and classifying the extracted features according to preset audio kinds, as recited in independent claims 1 and 8.”

Examiner agrees that Nordqvist does not explicitly disclose these features. However, Applicant is arguing that Nordqvist does not teach these features while the rejection is based on a 103(a) obvious type rejection. Examiner states in the rejection that these elements are not taught but then further discusses why the claim is obvious in view of Nordqvist. Applicant does not appear to disagree with the rationale provided in the obviousness rejection and thus the rejection is maintained.

Applicant further alleges:

Further, Nordqvist et al. fails to teach or suggest determining an audio kind of a listening audio by pattern-matching a feature of the listening audio with the classified features, as recited in independent claims 1 and 8. Rather, Nordqvist et al. teaches comparing the extracted feature vectors with a predetermined feature vector, to associate with real life listening environments and to adapt the hearing prosthesis to a user's current listening environments.

Examiner respectfully disagrees. Applicant believes that comparing the extracted vectors with a predetermined feature vector would not meet determining the audio kind by pattern matching. However, this is precisely what happens. Nordqvist compares these extracted vectors with a predetermined vector to determine a listening environment, i.e. determining an audio kind (type of environment currently in, samples of the background in that environment) of a listening audio (current environment) by pattern matching (comparing extracted vectors) a feature of the listening audio with the classified features (comparing extracted vectors with the stored predetermined feature vector to match the environment).

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 – 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 8 claim “An apparatus and method for displaying audio.” A review of the specification reveals no disclosure of any type of display, or any displaying of audio using the apparatus shown in Fig. 1. The closest teaching is likely Fig. 2 which

shows waveforms of various types of audio. However, these waveforms are never taught to be displayed by the device. Rather, they are shown as an example of the various types.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 – 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 8 claim “An apparatus and method for displaying audio.” The specification does not appear to reveal what “displaying audio” entails. It appears to the examiner that this is merely presenting audio to the user. To expedite prosecution it will be interpreted in this manner.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1 – 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nordqqvist (U.S. Patent 6,862,359).

Regarding **Claim 1**, Nordqvist discloses:

An apparatus for displaying (i.e. a hearing prosthesis that adjusts audio output depending on the environment; abstract), the apparatus comprising:

a preprocessing part configured to collect sample audio data (temporal and spectral characteristics of a predetermined sound source may be obtained based on real-life recordings of one or several representative sound sources; col. 8 lines 12 – 23).

Nordqvist does not explicitly disclose the preprocessing part to extract features from the collected sample audio data and to classify the extracted features according to preset audio kinds. However, Nordqvist does disclose that the system stores predetermined sound sources/Hidden Markov Models in col. 5 lines 28 – 52. These models are obtained and stored in advance for comparison to the listeners' current environment; col. 2 lines 53 - 67. Nordqvist, however, is silent as to how these are obtained. However, Nordqvist does disclose extract features from the collected sample audio data and to classify the extracted features according to preset audio kinds (i.e. the processing means are adapted to extract feature vectors that represent predetermined signal features of the consecutive signal frames; col. 3 lines 54 – 67). These extractions, however, are done on the instant listening position. It would have been obvious to also apply these extractions to the initial obtaining of the associated hidden

Markov models disclosed in col. 8. It would be desirable to measure and create these predetermined models in the same manner as the measuring would be achieved in the actual listening environment to ensure proper signal recognition.

Nordqvist further discloses:

An audio mode determining part configured to determine an audio kind of a listening audio by pattern-matching a feature of the listening audio with the classified features (i.e. the processing means are adapted to extract feature vectors that represent predetermined signal features of the signal frames, these vectors are then compared to Hidden Markov Model's associated with real life listening environments; cols. 3 and 4) and to switch an audio mode according to the determined audio kind (i.e. switching between different present programs to adapt the hearing prosthesis to a user's current listening environment; col. 1 lines 15 – 20).

Regarding **Claim 2**, in addition to the elements stated above regarding claim 1, the modification of Nordqvist further discloses:

wherein the preprocessing part comprises:  
a sample audio database configured to collect and to store the sample audio data in the sample audio database (i.e. the predetermined model's are obtained as stated above regarding claim 1, these model's are stored in a designated area of memory col. 7 lines 9 – 19; since these model's are stored in memory for later use, they can be retrieved at a later time, this retrieve requires identification and thus the storing/retrieving/identifying model's a typical database);

a first feature extracting part configured to extract the feature of the sample audio data stored in the sample audio database (i.e. the processing means to extract feature vectors as applied to the predetermined environments; likely at the time of fitting or manufacturing; see above claim 1); and

an audio kinds sorting part configured to classify the extracted features according to the preset audio kinds (i.e. the stored feature vectors are associated with various listening environments; col. 5; these features must be extracted and arranged {sorted} in some manner in order to allow comparison with data from the input to be analyzed).

Regarding **Claim 3**, in addition to the elements stated above regarding claim 2, the modification of Nordqvist further discloses:

wherein the first feature extracting part extracts the features from the sample audio data by using any one selected from the group consisting of ICA (Independent Component Analysis), PCA (Principle Component Analysis), clustering, and vector quantization (i.e. vector analysis is used; col. 3).

Regarding **Claim 4**, in addition to the elements stated above regarding claim 2, the modification of Nordqvist further discloses:

wherein the audio kinds sorting part classifies the features according to the preset audio kinds by using any of a learning model and a statistical model (i.e. the piece/vectors extracted are used for a probability {statistical} comparison, as stated above they must be arranged {sorted} in some manner to allow for comparison).

Regarding **Claim 5**, in addition to the elements stated above regarding claim 2, the modification of Nordqvist further discloses:

wherein the audio mode determining part comprises:

a second feature extracting part configured to extract the feature from the listening audio if the listening audio is inputted (i.e. the processing means adapted to extract feature vectors from the audio input signal col. 3; not the means used in the modification to produce the classification results stated above);

a pattern matching part configured to pattern-match the feature of the listening audio with the classified features and outputting a result of the pattern-matching (i.e. determining classification results based on the Hidden Markov Models of the input signal as compared to the pre-stored results; entire background; results output to next block for adjustment);

an audio sorting determining part for determining an audio kind of which a feature is the most similar to the feature of the listening audio based on the result of the pattern-matching (i.e. producing a sequence {sorted} of probability values represented by a numerical value; col. 5) ; and

an audio mode switching part configured to switch a current audio mode to an audio mode with respect to the determined audio kind ( i.e. automatic parameter adjustment; cols 1 lines 15 – 20 and co. 2 lines 53 – 67).

Regarding **Claim 6**, in addition to the elements stated above regarding claim 5, the modification of Nordqvist further discloses:

wherein the second feature extracting part extracts the features from the listening audio by using any one selected from the group consisting of ICA (Independent Component Analysis), PCA (Principle Component Analysis), clustering, and vector quantization (i.e. vector analysis is used; col. 3).

Regarding **Claim 7**, in addition to the elements stated above regarding claim 5, the modification of Nordqvist further discloses:

wherein the pattern-matching part pattern matches the feature of the listening audio with the classified features by using any one selected from the group consisting of dynamic programming, HMM (Hidden Markov Model) method, and neutral network method (i.e. the system uses Hidden Markov Model's).

**Claims 8 – 14** claim the method for operating the apparatus claimed in claims 1 – 7 and are rejected under the same grounds as stated above.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW C. FLANDERS whose telephone number is (571)272-7516. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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